

**REMARKS**

Claim Rejections - 35 U.S.C. 112

In the official action the Examiner rejects claims 1-5 under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. The Examiner asserts that the claims fail to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Actually, the Examiner's assertion is incorrect. It is believed that the claims do particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

The Examiner asserts, with respect to claim 1, that the phrase the optical beam "having information content" with a minimum signal frequency component is unclear. Why is that phraseology unclear? The Examiner inquires as to what information is carried by or applied to the beam. The Applicant responds by asserting that 35 U.S.C. 112, second paragraph, does not require that such detail be included in the claims and moreover gives the Applicant the privilege of presenting claims directed to the subject matter which the Applicant regards as being the invention.

In response to the Examiner's inquiry, the following information is provided. It is indicated on page 1 of the application as filed that the present invention can be used in laser communication, remote sensing and non-destructive testing applications. There is no limitation set forth in the specification as to the sort of information which may be carried for communication purposes (for example) on an optical beam. Indeed, it is hard to imagine the sort of information which could not be carried for communication purposes by an optical beam. In addition to communication applications, the applicant clearly indicates that the present invention can be used with other applications such as remote sensing and non-destructive testing applications.

It is submitted that there is no need to indicate in the claims what sort of information is carried by or applied to the optical beam and, moreover, in view of the fact that the Applicant has the privilege of defining the scope of the claims and since the Applicant does not wish to amend claims 1-5 to indicate what sort of information content is carried by or applied to the beam, the Examiner is respectfully requested to withdraw the request.

The Examiner also asks "is this information intensity or actual information?" With all due respect to the Examiner, the question is not understood. Hopefully, the Examiner will withdraw the rejection for the reasons set forth above, but if not, then the Examiner is respectfully requested to state her rationale for the rejection in clearer terms.

Claim Rejections - 35 U.S.C. 103

The Examiner rejects claims 1-12 and 14-20 under 35 U.S.C. 103 as being unpatentable over Monchalin in view of Figure 1 of the present application. This grounds for rejection is respectfully traversed.

For the record, the Applicant has tried repeatedly to set up an interview with the Examiner to discuss this rejection since the Examiner's rationale for making this rejection is simply not understood. In spite of repeated requests for an interview, none has occurred, and therefore in order to avoid having to obtain more than one extension of the term for responding, the Applicant is forced to file this response without the aid of an interview with the Examiner. However, in view of the difficulty in being able to conduct an interview with the Examiner, the USPTO is respectfully requested to assign a new Examiner to this application who would be willing to discuss the prior art rejections, assuming they are continued in the future, with Applicant and Applicant's attorney.

It is noted that the Examiner did agree to one interview, but that interview did not occur because of a bad storm which visited the Washington, D.C. area about the time that the interview was scheduled to occur (it is understood that the Examiner did not report to work that day). Subsequent requests for an interview have not met with success.

One point which Applicant would like to discuss with the Examiner is the Examiner's rationale for trying to combine Monchalin with the Applicant's submitted prior art. As indicated above, Examiner's rationale is simply not understood.

Part of the problem which faces the applicant deals with assumptions which the Examiner apparently makes vis-a-vis the Monchalin patent. For example, the Examiner asserts that the two optical components 114', 116 are not being expressly taught as being in quadrature. See page 3, line 5 of the most recent official action. Note that the Examiner makes this statement with

respect to Figure 3 of the Monchalin patent. However, at column 6, lines 52-57, Monchalin discusses the fact that the embodiment of Figure 3 certainly provides quadrature operation.

As a result, the Examiner's premise for making the rejection based upon the Monchalin reference falls apart. If Monchalin is already in quadrature, then why add any delay to any of the optical beams shown therein? Adding delay can just increase the expense of the apparatus and, moreover, can increase the cost of the optical components if the laser must, for example, have a longer coherence length. The added delay would surely interfere with the quadrature operation which Monchalin desires. So, why add our delay?

Further, the Applicant submits that one skilled in the art would understand that the additional time delay may result in degraded operation of the system disclosed in Monchalin. The Monchalin system has a reference beam 100b and a probe beam 100a. Since only the probe beam 100a encounters the vibrating structure under examination, any additional time delay would not add any functionality to the system. That is, with an additional time delay added to the system, either the signal imposed on the probe beam 100a, or the reference beam 100b, would arrive at the mixer at a different time, with the detected output information unaffected in any useable sense. That is, the increased differential time delays would appear to provide nothing useful in the Monchalin system. However, as discussed above, the increased differential path may impose greater and more costly demands on the source laser 102, in terms of coherence length, stability, etc. Therefore, the question remains, as posed above, if the added delay adds no improvement, why add the delay?

Also, the Examiner's discussion of adding delay to a path is troublesome given the fact that when it comes to quadrature operation, the delay which might be inserted is usually discussed in terms of a "phase shift" just as Monchalin does at column 6, line 56. So, when the Examiner is talking about a "delay device", does the Examiner really mean a phase shifter? Those skilled in the art will appreciate that the delay line shown in Figure 1 would involve a delay equal to very many wavelengths of the light, whereas phase shifters which are used as quadrature control insert a delay equal to less than one wavelength of the light.

So, even if the Examiner had been correct in her assumption that Figure 3 of the Monchalin patent did not provide for quadrature operation, a person skilled in the art would not use the

delay line shown in Figure 1 of Applicant's admitted prior art in order to obtain quadrature. They would use a phase shifter instead.

Finally, the Applicant does not agree with the Examiner's comments with respect to where such a phase shifter might be inserted in Monchalin if one were needed. However, since an additional phase shifter is not needed, it is rather pointless to get into that discussion at this stage.

The bottom line is that the Applicants do not agree with the Examiner's opening premise nor does the Applicant agree with the other assertions which the Examiner makes vis-a-vis the Monchalin reference. There is absolutely no motivation to make the combination which the Examiner suggests in the official action. The suggestion clearly comes from Applicant's own disclosure and Applicant's claims as opposed to from the references themselves. It is submitted that the Examiner's assertions are based upon an *ex post facto* analysis of Applicant's claims, as opposed to being based upon the teachings of the prior art.

Turning to the Examiner's analysis with respect to claim 20 on page 5 of the official action, here the Examiner says that the beams exiting the combiner of Monchalin are specifically disclosed as being in quadrature.

First, the Applicant objects to the Examiner trying to interpret Monchalin two different ways, as a matter of Examiner convenience. Why does the Examiner assume in her analysis of claim 1 that Monchalin is not in quadrature whereas in her analysis of claim 20, Monchalin is in quadrature? With all due respect to the Examiner, this certainly appears to stem from the aforementioned *ex post facto* analysis of Applicant's claims, as opposed to looking simply at what the prior art teaches and what modifications might be obvious in view of the teachings of the prior art alone.

In any event, if Monchalin signals are in quadrature as the Examiner indicates, then why insert a delay which is greater than an inverse of the minimum signal frequency component? Would not that be expected to destroy quadrature? And if it destroys quadrature, why would a person of ordinary skill in the art do that?

This shifting of position by the Examiner simply does not make sense unless the only object is to try to develop some rationale for rejecting the claims without reference to whether the analysis is

either internally consistent or consistent between the various independent claims in the application.

Reconsideration of this application is respectfully requested.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

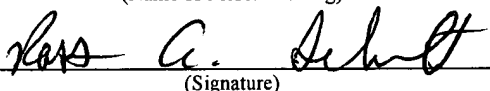
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October 17, 2003

(Date of Mailing)

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Respectfully submitted,



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